AGENDA NOTE ON THE SUBJECT TO BE PLACED BEFORE THE TENDER SCRUTINY COMMITTEE (Technical)

Sub: Work of supply installation and commissioning of IoT devices for the RO plants including online monitoring software along with 2 years O&M of devices for the RO plants coming under EE(BW&PS)-1-1 division(166 No). Reg -PQ criteria.

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Direction has been issued to BWSSB vide ref no DCM office letter ref 4527/2024-25 dated:20.02.2025 to takeover and maintain the RO plants presently maintained by BBMP, from April 1 2025.

Over 166 RO plants exist in the Byatarayanapura,Hebbala, Gandhinagar and Malleswaram assembly constituency many in varying states of disrepair and operating under informal or misgoverned arrangements. This transition gives BWSSB a strategic opportunity to:

1. End years of unmanaged operations and revenue leakages
2. Introduce transparent and accountable governance
3. Digitally monitor, operate, and optimize service delivery
4. Create a financially self-sustaining water distribution network.

In today's era of digital transformation, the Internet of Things (IOT) has emerged as a game-changer across various industries, including the water treatment sector. By integrating IOT technologies into these RO plants provides imperative benefits, including enhanced operational efficiency, real-time monitoring, predictive maintenance, and optimized resource utilization.

RO plants are complex systems that involve multiple components, such as pretreatment units, high-pressure pumps, membranes, and post-treatment processes. Monitoring and maintaining these components manually can be time-consuming, labor-intensive, and prone to human error, IOT solutions offer a comprehensive approach to streamlining operations, improving reliability, and reducing operational costs in industrial RO plants

Accordingly, Administrative approval for subject work has been obtained by Hon’ble Chairman and estimate for the subject work has been technically sanctioned for an amount of Rs.1,98,50,100/-.

The following are the salient features of the tender to be called for:

a. Amount put to tender: **Rs.159.36 lakhs (Excluding GST)**
b. Completion period: **6 months**

c. Amount put to tender: **Rs. 188.045 lakhs (Including GST)**

As per KW-4 document of KTPP Act the following Pre-Qualification criteria has been proposed to invite the subject tender:

1. EMD: **Rs.2,39,000/-**
2. The Bidder should have achieved at least two financial years a minimum financial turnover of **Rs.376.09 lakhs** in the last five years (2020-21, 2021-22, 2022-23, 2023-24 & 2024-25).
3. Satisfactorily completed as prime contractor at least one similar work in last five years of value not less than **Rs.94.02 Lakhs.**
4. **Relaxation of quantity of work from 80% of quantity of work to 50% of quantity of work, as the work is "One of a Kind" as of now.**
5. Satisfactorily completed as prime contractor **at least 83 nos** of Installation/O&M of RO Plants in last five years And Installation of IoT (**Either in JV Or Individual**).
6. Liquid assets and /or availability of credit facilities of not less than **Rs.56.41 Lakhs** (Credit lines/letter of credit/certificates from Nationalized / Schedule banks in India for meeting the fund requirement etc.
7. Tenderers shall demonstrate the available tender capacity will be calculated as under:

   Assessed available tender capacity = (A*N*1.5 - B)> **Rs. 188.045 1lakhs**(Including GST)

Where,

A= Maximum value of similar works executed in any one year during the last five years (updated to 2022-23 price level at 10% per year) considering the completed as well as works in progress.

N= Number of years prescribed for completion of the works for which tenders are invited.

B= Value, at 2022-23 price level of existing commitments and on-going works to be completed during the next 2 years (period of completion of the works for which Tenders are invited)

CONDITIONS:

1) The tenderer shall be a Civil/Electrical Class-I contractor registered under KPWD.

SPECIAL CONDITIONS:

1. **Relaxation of quantity of work from 80% of quantity of work to 50% of quantity of work, as the work is "One of a Kind" as of now.**
2. The firm has to have the Memorandum of Understanding (MOU) with GEM certified Original Equipment Manufacturer (OEM) certificate for manufacturing Internet of Things devices to R O Plants.
3. The said manufacturer has to submit details for demonstration of installation of minimum 50 Internet of Things devices for R O Plants.

1 Core Functionalities

- Real-Time Ground Water Table Analytics: Measure ground water levels at regular intervals using sensor-based monitoring and provide behavioral analytics.
- Inbuilt Timers: Include configurable timers for flexible R O Plants scheduling to promote sustainable use.
- Power Analytics: Monitor the apparent power of the motor with detailed analytics.
- Utilization Analytics: Time-stamp every R O Plants event and user interaction, identifying behavioral patterns with associated analytics.
- Dry Run Protection: Automatically halt operation during insufficient water flow to prevent damage.
- Locked Rotor Protection: Protect the motor against damage caused by rotor lock conditions.
- Electronic Overload/Underload Relay: Protect connected motors from electrical anomalies.
- Single Phase Preventer: Ensure motor protection in case of imbalanced electrical loads.
- Auto Start with Adjustable On-Time Delay: Enable seamless restart with customizable delay settings.

2 General Features

- Digital Display: Provide a 16x2 LCD for real-time monitoring and configuration settings.
- Interactive LED Indicators: Include multi-color LEDs for operational status, warnings, and alerts.
- Durable Casing: Use ABS weatherproof enclosure for protection against harsh conditions.

- Ease of Installation: Ensure a pre-configured setup for quick installation and wiring.
- User Interface: Provide an intuitive navigation menu with a web app / native app compatible with Android, iOS, and desktop platforms.

3 Internet of Things Connectivity and Cloud Integration

- 4G Cellular Network: Offer high-speed, reliable remote connectivity with M2M sim.
- Cloud Storage: Provide secure storage for historical data and analytics.
- APIs: Enable seamless data exchange with third-party platforms and applications.
- Web Application: Ensure multi-device compatibility for real-time monitoring and configuration.
- Admin and User Dashboards:
  - Admin Dashboard: Advanced configuration options, access control, and detailed analytics.
  - User Dashboard: Real-time insights, scheduling, and monitoring capabilities.
- Remote Notifications: Send instant alerts for operational updates.
- Audit Trail: Maintain detailed logs for device and user actions.

4 Data Analytics and Visualization

- Dashboard with Graphical Insights: Compatible for intuitive graphical representation of R O Plants operations and data.
- GIS Integration: Compatible for geospatial data for location-based insights.
- Weather Integration:
  - Offer 3-day forecasts for planning water distribution schedules.
  - Provide historical weather data for enhanced analytics.
- Water Usage Analytics: Generate comprehensive reports on water consumption patterns, including one-year usage history.
- Power Usage Analytics: Monitor and analyze motor power consumption.
- Preventive Maintenance Alerts: Send notifications for servicing needs based on device health and usage data.
- Event Logs: Ensure downloadable CSV reports for analysis and troubleshooting.

5 Advanced Monitoring and Diagnostics

- Device Self-Test and Diagnostics: Include built-in tools for health checks and diagnostics.

- Interactive Screens: Provide dedicated displays for status updates and troubleshooting.
- Event Logs: Maintain logs of operational events for easy tracking and analysis.

6 Security and Compliance
- Role-Based Access Control: Support multi-user management with secure permissions.
- Data Encryption: Ensure secure data transmission and storage.
- Comprehensive Audit Trail: Maintain logs of all device and user activity for compliance and traceability.

7 Power and Environmental Specifications
- Ground Water Level Measurement Accuracy: ±10%
- Flow Measurement Accuracy: Measure minimum 0.1m/s Flow rate
- Power Analytics Accuracy: ±10%
- Power Supply: 3-Phase AC, 415V, 50Hz.
- Motor Compatibility: Up to 25 HP, 3-phase motors.
- Operating Temperature Range: -20°C to 65°C.
- Humidity Tolerance: Up to 90% non-condensing.
- Fault Tripping Time: ≤5 seconds.

8 Additional Features
- CSV Reports: Provide exportable operational data for offline analysis.
- Weather Updates: Integrate real-time weather updates to support decision-making.
- Critical Alerts: Send instant notifications for faults and updates.
- Preventive Maintenance Scheduling: Automate reminders for servicing.
- Training Materials: Include built-in app access to training videos for end-user education.

9 Make in India Initiative and Local Industry Support
- Made in India: Ensure the Internet of Things controllers are designed and manufactured in India to promote local innovation and reduce dependency on imports.
- Local Service Support: Vendors must provide robust after-sales support and services within India to minimize downtime.
- Empowering Local Industries: Preference will be given to vendors sourcing components locally and supporting Indian industries.
- Cost-Effectiveness: Emphasize affordability while maintaining high-quality standards to benefit a broader user base.

- Skill Development: Vendors must provide training and knowledge transfer to local technicians for installation, servicing, and troubleshooting.

10 Submission Requirements

Prospective vendors are requested to submit detailed proposals addressing all the technical specifications outlined above. Proposals must include:

I. Compliance Matrix: Confirming adherence to each specification.
II. Detailed Product Description: Including datasheets and technical documentation.
III. Local Service and Support Plan: Detailing after-sales support availability.
IV. Manufacturing Details: Including evidence of 'Make in India' compliance.
V. Costing and Delivery Timeline: Provide a clear breakdown of costs and delivery schedule.

14. To submit certificate that data derived from BWSSB should not be shared to others as the acquired data is sole propriety of BWSSB.

In view of the above, the subject is placed before the Tender Scrutiny Committee (Technical) for its review and clearance to incorporate pre-qualification criteria as detailed above for inviting the tenders for the **‘Work of supply installation and commissioning of IoT devices for the RO plants including online monitoring software along with 2 years O&M of devices for the RO plants coming under EE(BW&PS)-1-1 division(166 No)”.**

Chief Engineer
(Design & QA)